Cover Stories:

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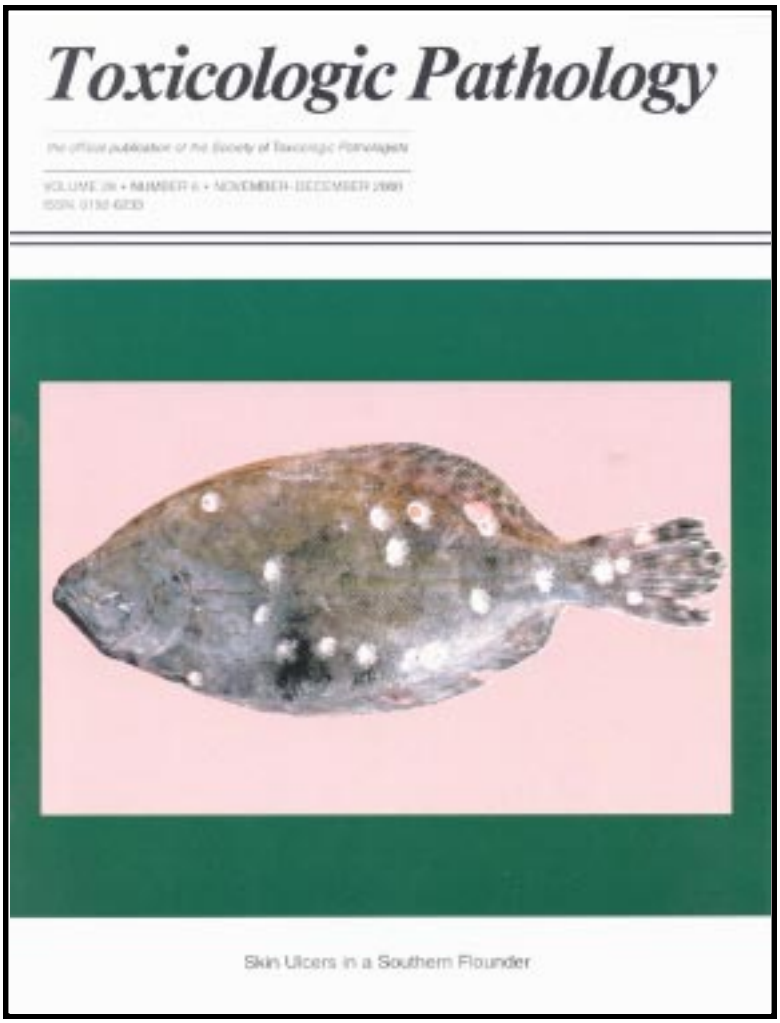

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Edward J. Noga. 2000. Skin Ulcers in Fish: Pfiesteria and Other Etiologies. ***Toxicologic Pathology****. 28(6):807-823.*

Skin ulcers or "sores" on fish are very common in polluted waters and aquacultural operations. This article presents a comprehensive review of all the documented causes of ulcers in fish and how various types of stressors may lead to their development. It points out that ulcers caused by various problems may look identical to the naked eye; this has lead to public confusion about the cause of ulcers in some east cost estuaries of the U.S. (Chesapeake Bay, Delaware Bay and Albemarle-Pamlico Sound). For example, when it was discovered that *Pfiesteria*, a toxic algae, could cause skin ulcers on fish, there were statements made by some that it was the primary cause of the highly common ulcer epidemics in menhaden and other fish. If true, this would have adverse implications for commercial and recreational fisheries and may also have significant public health impacts. However, much of this concern was based upon a misunderstanding of the cause of skin ulcers and our inadequate knowledge of the importance of specific risk factors in disease development (i.e., whether *Pfiesteria* is the main cause of skin ulcers in these estuaries is still unknown).

Many different types of toxins and other "stressors" can cause skin ulcers on fish besides *Pfiesteria*. In work supported by USDA-NRI, Edward Noga's laboratory has discovered that endocrine changes may also lead directly to skin damage in many fish species. These endocrine changes might be triggered by any of a number of environmental causes. This research will provide guidelines to environmental managers and those involved in aquaculture about the important issues surrounding ulcer epidemics and priorities that need to be addressed. A clear understanding of which stressors cause skin ulcers is needed before we can make any valid scientific conclusions about the actual cause(s).

This research was supported by a grant from the NRICGP, Animal Health and Well-Being Program of the Animals Division.

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